

Title (en)  
SIDEWALL FUNCTIONALIZATION OF CARBON NANOTUBES WITH HYDROXYL-TERMINATED MOIETIES

Title (de)  
SEITENWANDFUNKTIONALISIERUNG VON CARBONNANORÖHRCHEN MIT HYDROXYTERMINIERTEN MOLEKÜLEINHEITEN

Title (fr)  
FONCTIONNALISATION DES PAROIS LATÉRALES DE NANOTUBES DE CARBONE À L'AIDE DE FRACTIONS À TERMINAISON HYDROXYLE

Publication  
**EP 1641974 B2 20150527 (EN)**

Application  
**EP 04809445 A 20040616**

Priority

- US 2004019015 W 20040616
- US 47893603 P 20030616
- US 49055603 P 20030728

Abstract (en)  
[origin: EP2368932A1] The present invention is directed to a fibre-reinforced polymeric composite comprising a fibre reinforcement over-coated with nanotubes and impregnated with a polymer, and to a method of making a fibre-reinforced polymeric (FRP) composite, comprising: over-coating a dry reinforcement fibre with nanotubes; and placing the over-coated reinforcement fibre into a mould and then impregnating the fibre with uncured polymer.

IPC 8 full level  
**C01B 31/02** (2006.01); **B29B 15/10** (2006.01); **C08J 5/00** (2006.01); **C08K 7/24** (2006.01); **C08K 9/04** (2006.01); **C09K 9/02** (2006.01); **D06M 11/09** (2006.01); **D06M 11/52** (2006.01); **D06M 13/11** (2006.01); **D06M 13/148** (2006.01); **D06M 13/196** (2006.01); **D06M 15/55** (2006.01)

CPC (source: EP US)  
**B82Y 30/00** (2013.01 - EP US); **B82Y 40/00** (2013.01 - EP US); **C01B 32/156** (2017.08 - EP US); **C01B 32/174** (2017.08 - EP US); **C08J 5/005** (2013.01 - EP US); **C08J 5/06** (2013.01 - EP US); **D06M 11/09** (2013.01 - EP US); **D06M 11/52** (2013.01 - EP US); **D06M 13/11** (2013.01 - EP US); **D06M 13/148** (2013.01 - EP US); **D06M 13/196** (2013.01 - EP US); **D06M 15/55** (2013.01 - EP US); **C01B 2202/02** (2013.01 - EP US); **C01B 2202/04** (2013.01 - EP US); **C01B 2202/06** (2013.01 - EP US); **C08J 2363/00** (2013.01 - EP US); **D06M 2101/40** (2013.01 - EP US); **Y10S 977/742** (2013.01 - EP US); **Y10S 977/745** (2013.01 - EP US); **Y10S 977/746** (2013.01 - EP US); **Y10S 977/748** (2013.01 - EP US); **Y10S 977/75** (2013.01 - EP US); **Y10S 977/752** (2013.01 - EP US); **Y10S 977/753** (2013.01 - EP US); **Y10S 977/778** (2013.01 - EP US); **Y10S 977/847** (2013.01 - EP US); **Y10T 428/24994** (2015.04 - EP US); **Y10T 428/30** (2015.01 - EP US); **Y10T 428/31511** (2015.04 - EP US)

Citation (opposition)  
Opponent :

- EP 1457821 A1 20040915 - SAMSUNG ELECTRONICS CO LTD [KR]
- A. EITAN ET AL.: "Surface Modification of Multiwalled Carbon Nanotubes: Toward the Tailoring of the Interface in Polymer Composites", CHEMISTRY OF MATERIALS, vol. 15, no. 16, 2003, pages 3198 - 3201
- Schädler L. S.: "Polymer Nanocomposites - is smaller better?" Slides of a presentation given by Dr. Schädler on 14.11.2002 at 16h30 at the Cornell University in Ithaca, US
- F. CRAWFORD, CORNELL CHRONICLE, vol. 34, no. 14, 14 November 2002 (2002-11-14), pages 1 - 8
- J. ZHU ET AL.: "Improving the Dispersion and Integration of Single-Walled", NANOLETTERS, AMERICAN CHEMICAL SOCIETY, vol. 3, no. 8, 26 June 2003 (2003-06-26), pages 1107 - 1113
- K. PETER ET AL.: "Organische Chemie", vol. 3, 2000, WILEY-VCH VERLAG GMBH, WEINHEIM, pages: 351

Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)  
**WO 2005028174 A2 20050331; WO 2005028174 A3 20051006**; AT E519712 T1 20110815; CA 2529626 A1 20050331; CA 2529626 C 20120807; CA 2532190 A1 20050331; CA 2532190 C 20120821; CA 2774877 A1 20050331; CA 2774877 C 20150203; EP 1638746 A2 20060329; EP 1638746 B1 20130508; EP 1641974 A2 20060405; EP 1641974 B1 20110810; EP 1641974 B2 20150527; EP 2368932 A1 20110928; EP 2368932 B1 20140115; HK 1084072 A1 20060721; HK 1084162 A1 20060721; JP 2006527786 A 20061207; JP 2007523818 A 20070823; JP 4758892 B2 20110831; JP 4970936 B2 20120711; US 2006166003 A1 20060727; US 2007189387 A1 20070816; US 7601421 B2 20091013; US 7632481 B2 20091215; WO 2005028740 A2 20050331; WO 2005028740 A3 20050707

DOCDB simple family (application)  
**US 2004019188 W 20040616**; AT 04809445 T 20040616; CA 2529626 A 20040616; CA 2532190 A 20040616; CA 2774877 A 20040616; EP 04809445 A 20040616; EP 04809447 A 20040616; EP 11171148 A 20040616; HK 06105299 A 20060504; HK 06105300 A 20060504; JP 2006517284 A 20040616; JP 2006517314 A 20040616; US 2004019015 W 20040616; US 55990505 A 20051208; US 56035104 A 20040616